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Persons with disabilities and access to information and communication services

An exploratory research in the southern cone

por los Derechos Civiles

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https://adc.org.ar

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The design of this report meets accessibility requirements. Hence, all charts, tables and graphs are followed by a textual description so that they may be read by automatic readers.

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Introduction

1. Executive Summary

- This research was based on three interconnected and interrelated levels of analysis:

1. The first analysis contemplates international laws regarding the rights of persons with disabilities and accessibility to online environments, including their regional and national specifications.

2. The second analysis provides a retrospective view of the research process. It identifies stakeholders and assesses the field work done, which took place from December 2018 to June 2019. It also addresses academic and technical discussions and methodological redefinitions typical of any research process.

3. The third is the most important level of analysis, as it involved people's participation of users with disabilities who interacted with digital technologies under a predefined context.

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1 This report was compiled by Adriana Zanutigh, research coordinator of "Persons with Disabilities and Access to Information and Communication Services", with the assistance of Sara Soubelet. Editing and Proofreading: Matías Chamorro. | https://adc.org.ar. Cover design and layout: Cooperativa El Maizal.

Key terms

- **Disability is a Human Rights issue.** It is a "social construction". There are social and cultural barriers that prevent persons with disabilities from fully exercising their citizenship rights. This approach to disabilities is known as **social model.**

- The **International Convention on the Rights of Persons with Disabilities** has been incorporated by Argentina, Uruguay and Chile and must be applied transversally along with national laws and the standards of the World Wide Web Consortium (W3C) to enact laws and design public policies for the digital environment.

- States must **be accountable and make a commitment** by allocating resources to strengthen existing scopes of action and create new areas for developing **active policies** promoting web accessibility. No legal text is sufficient on its own merit to transform social reality or promote social justice and inclusion.

- States must **prepare and provide statistical data** regarding disability, with a special focus on information and communication technologies.

- States must establish and make public **audit agencies** in charge of monitoring mechanisms and supervising applicable laws as well as the relevant public policies.

- Persons with disabilities and the organizations they belong to must be treated as **priority stakeholders** in all processes involving the analysis, adoption or assessment of laws, lines of action and public

policies relative to the access of information and communication services in online environments.

- Civil society as a whole must get involved in promoting the necessary cultural and legal changes using the **mechanisms of engament** available in each country for citizens.

- The public and private sector must **promote and finance researches** furthering and improving web accessibility conditions for persons with disabilities.

- The **syllabuses of courses of studies** which are **strategic** for the inclusion of persons with disabilities (PWD) must be revised so as to include a broad notion of accessibility as the transversal axis of professional practice.

2. Legal Framework: Disability is a Human Rights issue

From a Human Rights perspective, disability is associated with the idea that it is social and cultural barriers that prevent people from fully exercising their citizenship rights. Hence, the term is no longer applied to people individually.

This approach to disability, known as the **social model**, is an improvement of two previous approaches: the **needlessness one**, where PWD were considered unnecessary and subjugated to eugenic, discriminatory and isolation practices and the **rehabilitation model**, where PWD are no longer deemed unnecessary as long are they are "made normal" through rehabilitation and the work done by different health care professionals.

The **social model** has made important progress in terms of how we think about persons with disability, which is defined as a "social construction". This theoretical approach has been incorporated by the **International Convention on the Rights of Persons with Disabilities (2006)**[2].The **Preamble** of the Convention defines disability as an evolving concept that (...)

"results from the interaction between persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others" (UN, 2006)

The key aspect of this model is treating disability as a Human Rights issue. Hence, the policies offered and the answers provided to the problems faced by PWD[3] are assessed and designed from a Human Rights perspective and consistent with the principle of social inclusion.

Based on the provisions of the CRPD, ***all persons*** with any type of disability must enjoy all human rights and fundamental freedoms and adaptations must be introduced in the necessary spheres. The signatory countries ***must adopt all the relevant legislative and administrative measures, among others***, for the implementation of the rights recognized in the Convention.

Article 4 –General Obligations– of the CRPD, in particular, binds States to:

"To undertake or promote research and development of universally designed goods, services, equipment and facilities (...) which should require the minimum possible adaptation and the least cost to meet the specific needs of

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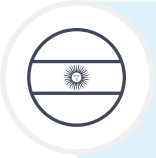
2 http://www.un.org/spanish/disabilities/default.asp?id=497 Last accessed 30-12-2018

3 Persons with disabilities

a person with disabilities, to promote their availability and use, and to promote universal design in the development of standards and guidelines (Art. 4, section f, UN, 2006).

Then, Article 9 –Accessibility– establishes that *"States Parties shall **take** appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, **to information and communications, including information and communications technologies and systems**, and to other facilities and services open or provided to the public, both in urban and in rural areas."* The concept is expanded in many of its sections.

It is estimated that more than one billion people have some type of disability; in other words, around 15% of the world population[4].



In Argentina, the overall population with "some disability" of six years old and more is 10.2% (of the total Argentine population). In absolute terms, it would amount to an estimated 3,571,983 people, according to INDEC's 2018 statistics[5].

In Chile, during the first term of 2016, the results of the Second National Study on Disability (Endisc)[6] The study, conducted in 2015, established that 16.7% of the Chilean population has some type of disability. This amounts to 2,836,818 people.

4 https://www.who.int/es

5 https://www.indec.gov.ar/nivel4_default.asp?id_tema_1=2&id_tema_2=21&id_tema_3=143

6 http://endisc.senadis.cl/

Finally, in the Oriental Republic of Uruguay, according to the results obtained from the survey made in 2004 by INE (National Institute of Statistics)[7], the disability prevalence reaches 7.6% of the total population living in urban private households in cities with 5,000 or more inhabitants (approximately 82% of the country's total population). In absolute numbers, the population with at least one disability is estimated at 210,400 people.

2.1 International, regional and national legal specifications.

2.1.1 Possible lines of work for a legislative and judicial strategy to promote the Right to Digital Accessibility.

Before designing a political, legislative or judicial strategy to defend, promote and enforce the right to digital accessibility, it should be consider that this is a human right recognized by an International Treaty of Human Rights and that it is part of the Body of Constitutional Law[8] in the three countries under study in this report.

In order to apply the legal framework on the right to online accessibility in these countries to promote the exercise of the rights recognized by the CRPD, it is necessary to integrate the legal framework offered by the CRPD with the legal institutes in place in the three countries, which could help design political, legal and judicial strategies to that effect. These institutes of law are the **writ of "amparo"** (which exists in the three

7 www.ine.gub.uy

8 Body of Constitutional Law refers to a set of laws which, despite not being part of the letter of the Constitution, add regulations, principles and values to it, apart from recognizing and ensuring people's rights. They integrate the Constitution when it comes to the interpretation and applicability of laws of lower status.

countries) and the **Popular Petition** (which exists in Argentina and Uruguay).

The legal aspect. A tool for enabling a legal strategy.

The existing Legal Framework found in the three Republics has not yet produced specific case law[9] regarding the Right to Digital Accessibility. The lack of relevant rulings shows that, on the one hand, we are at an initial stage when it comes to online accessibility and secondly, that the CRPD has been recently incorporated in the legal system. This allows for the possibility that court rulings relative to rights ensured by the CRPD be used as a basis for establishing a new case law on the Right to Digital Accessibility. Given its conventional/ constitutional nature, article 9 of the CRPD may be invoked to such effect, without the need to invoke any local laws.

The **writ of "amparo"** is a juditional action that can be used to developed a legal strategy to promote the enjoyment of the rights of PWD. The recourse is ensured to all persons both by the UNIVERSAL DECLARATION OF HUMAN RIGHTS (UDHR) and the AMERICAN CONVENTION ON HUMAN RIGHTS (CADH), which the three parties have signed[10].

In the three countries the *amparo* action is part of the Legal Framework currently in place. This action can be sought for protection against violations, obstacles or threats to the enjoyment of the rights recognized and ensured by the CRPD in particular, and the set of International Treaties on Human Rights signed by each country in general. The inhabitants of the three countries may appear before the court to file this action.

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9 In this work, case law refers to a set of court rulings issued by Justice Courts which are later used as legal background for settling future similar cases.

10 Universal Declaration of Human Rights (UDHR) and American Convention on Human Rights (ACHR), article 25.

In the Argentine Republic, the *amparo* action was afforded constitutional status by article 43 of the National Constitution[11].

In Chile, the *"amparo"* action is referred to as **"protective action"**. It is a "public subjective right of constitutional nature" seeking concrete protection by the State of fundamental rights.1 It may be filed against any private natural or legal person or public authority[12].

In Uruguay, the right to the *amparo* action is not in the Constitution, but is governed by Law 16.011[13], which distinguishes between two types o *amparo* actions: the *preventive* one (against the threat of harm) and the *corrective* one (once the damage has been done). The right is recognized by article 8 of the UDHR and article 18 of the ACHR, both being Human Rights Treaties currently in force.

The legislative aspect. A tool for enabling political/ legal actions.

No legal text is sufficient on its own merit to transform social reality or promote social justice and inclusion. Laws must go hand in hand with active government policies designed to promote the cultural changes required by accessibility laws together with human rights treaties such as the CRPD.

Current laws in the countries under analysis which complement the CRPD do not suffice to ensure to the PWD the right to digital accessibility. This means that

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11 The procedure is governed by Law 16.986 as amended.

12 Nogueira Alcalá Humberto LA ACCIÓN CONSTITUCIONAL DE PROTECCIÓN EN CHILE Y LA ACCIÓN CONSTITUCIONAL DE AMPARO EN MÉXICO, Available at https://scielo.conicyt.cl/scielo.php?script=sci_arttext&pid=S0718-00122010000100009

13 Law No 16.011. Available at https://legislativo.parlamento.gub.uy/temporales/leytemp7784142.htm

in Argentina and Uruguay citizens may have to resort to the **Popular Petition** –a democratic mechanisim that allows them to propose bills before the National Congress.

In fact, Argentina is the only country that has passed a Law on Accessibility to Online Information (Law 26.653). However, as it is a federal country, the scope of the law is restricted and insufficient to ensure the enjoyment of the right to digital accessibility nationwide[14].

Uruguay and Chile lack a law on digital accessibility.

This legal situation is an opportunity for PWD and their representative organizations to take political action in order to encourage debate in the public opinion and, in the case of Uruguay, to promote the enactment of relevant laws.

In **Argentina** and **Uruguay**, the **Popular Petition** has constitutional status.[15] In **Chile**, the Popular Initiative lacks regulation, but there currently are different legislative and social initiatives underway to provide such framework.

These are most of the importants aspects of the Legal Framework of the three countries regarding the Right to Digital Accessibility, with a focus on their similarities and differences.

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14 In Argentina, provincial legislative bodies must pass a ratification law for this law to be applicable in the provinces and their respective public administrations and government agencies. So far, 10 provinces have done so: Buenos Aires, Chaco, Chubut, Corrientes, Jujuy, La Pampa, Río Negro, Santa Fe, Mendoza and San Juan. Other provinces are in the process of introducing a bill.

15 Article 39 of the Argentine Constitution regulated by Law 24.747 of 1996. In Uruguay, it is provided under Article 79 of the Uruguayan Constitution, still lacking regulation.

1. The three countries have signed the UNIVERSAL DECLARATION OF HUMAN RIGHTS (UDHR) and the AMERICAN CONVENTION ON HUMAN RIGHTS (ACHR).

2. The three countries have signed the INTER-AMERICAN CONVENTION FOR THE ELIMINATION OF ALL FORMS OF DISCRIMINATION AGAINST PERSONS WITH DISABILITIES.

3. The three countries have ratified the CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES (CRPD).

4. In the three countries the CRPD integrates the Body of Constitutional Law of each Republic, which means that the rights recognized by the CRPD are enforceable before the authorities and third parties without the need to pass a local law to recognize them.

5. Aside from formal and procedural differences, the three countries have a remedy for the protection of constitutional rights, which can be used as part of a legal strategy to promote the enjoyment of the right to digital accessibility. In Uruguay this remedy is not part of the Constitution but it is regulated by law.

6. In Argentina and Uruguay, exists the "Popular petition". It has other formal requirements and characteristics and allows citizens to promote the enactment of laws in various fields.

7. Argentina is the only country where there is a specific law on digital accessibility. It is of federal nature and thus not applicable in provincial territories unless the province has adhered to the federal law. As a result, its effectiveness is doubtful.

8. In the three countries, there are control agencies with different legal backgrounds for the monitoring and promotion of Digital Accessibility: ONTI[16] in Argentina, SENADIS[17] in Chile and AGESIC[18] in Uruguay.

9. The three countries have adhered to the international standards of the World Wide Web Consortium (W3C).

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16 National Office of Information Technologies

17 National Disability Service

18 Agency for the Development of Electronic Management Government and the Information Society

3. Retrospective view of the research process: Identification of stake holders and field work.

This section traverses the different methodological decisions made throughout this research work, which extended from December 2018 to June 2019.

We began by relating the most relevant concepts of the CRPD and the aspects of quality of life[19], in order to identity individuals, agents or institutions from the technical, private and public sectors and from civil society who are stake holders in this field and select the associated portals, representative of the public and private spheres

Articles 5 to 30 of the Convention contemplate all the recognized rights of persons with disability. Article 9 expressly refers to the right of accessibility “to information and communications, including information and communications technologies and systems”.

"The rights recognized by the CRPD can be summarized as follows:

- Accessibility
- Equal recognition before the law
- Access to justice, freedom and security
- Personal mobility and freedom of movement
- Right to an independent life
- Freedom of expression and access to information

19 Parameters used internationally. There are 8 areas: personal development, self-determination, interpersonal relationships, social inclusion, rights, emotional well-being, physical well-being and material well-being.

- Household and family
- Education
- Health and rehabilitation
- Work and employment
- Social protection
- Participation in political and public life
- Participation in cultural life
- Recreation, leisure, sports, consumption; basic services; online consumption and social networks”

In order to identifiy key stake holders we took into account the provisions of the CRPD and the presence of the following general capabilities and characteristics:

- whether they have powers, competencies and responsibilities regarding the access to information and communications services for persons with disability;
- whether they are part of the community in charge of analyzing the situation of online environments and whether they have a legitimized interest in groups of persons with disability;
- their capacity to manage and negotiate with the various agents involved;
- their capacity, skills, knowledge, infrastructure and resources to create, propose and finance projects and initiatives related to inclusion and digital accessibility; and
- whether they have financing mechanisms to carry out those projects.

The confluence of these elements allowed us to identify a wide group of relevant stake holders: National States and their agencies, private companies, audit agencies, NGOs made up of persons with disability or working for PWD, public or private associations from the technical sector and educational institutions.

Upon identifying and analyzing the stake holders and their respective roles, we selected portals and websites from the public and private domains in all instances of the "research design" in order to identify a manageable sample group within the universe of websites to be observed. These groups represent, from an inclusive approach, their respective territories and subject matters and involve a diversity of users in the three countries under study.

Finally, we decided to focus on the universe of stake holders within the area of **"Social Security"**, which is undoubtedly linked to the subject matter of our research: access to information and communications services of PWD in online settings. This universe also allowed us to efficiently compare the three countries involved: Argentina, Chile and Uruguay.

For the **empirical work of our research**, the stages of which are described later, we tried to strike a balance between quantitative and qualitative data. Hence, **we designed ad hoc tools** for the collection of data related to:

1. Automated validations (home page browsing and thoroughly validations)

It is carried out by a software which analyze the websites programming codes and providing detailed information of the discovered errors.

In view of the available resources and the impossibility to build a more accurate and suitable automated application for the project, we adopted TAW[20] as the

20 TAW https://www.tawdis.net/# is an automatic on-line tool for analyzing website accessibility. Created with technical reference Web Accessibility Guidelines (WCAG 2.0) of W3C, it has more than 15 years, being the reference tool in Spanish speaking. Some of its advantages include the issuance of complete reports, the display of data and submission of reports via email without the need to register on the website. The generation of reports in the Spanish language eliminates any risks involving the interpretation of the information.

online validation tool to verify compliance with the WCAG 2.0 criteria in the 389 proposed websites.

Then, the team developed a **WEB APP (web application)** to read all emails sent by TAW with the error reports generated by the tool for each of the websites analyzed so as to systematize the results in a database that would allow obtaining different readings needed for drawing conclusions. The results obtained were entered in a spreadsheet in order to facilitate interpretation and use of the information.

2. User experience validations.

They complement automated validations. These are carried out by users –in this case by persons with different types of disability– in different situations and using various devices.

In this case, we decided to use Google Forms for users' profiles and consent, together with Excel sheets with the Dimensions to be observed based on the 4 Web Content Accessibility Guidelines (perceivable, operable, understandable and robust), semi-structured questionnaires for interviews and observation forms for the context of the validation.

3. Retrospective view of the research process: Identification of stake holders and field work

They were based on a questionnaire providing information on the legal framework and its interpretation, public policies of the institution related to the subject matter, resource allocation, development and monitoring standards, training of personnel in aspects such as Web Accessibility Best Practices, and existence of Manuals. A difference was made in terms

of type of government, applicable laws, access to online resources and type of informant: Government sector, Comptrollers, NGOs.

3.1 Automated validations. Some relevant data.

In parallel to the execution of the automated validations of the 389 websites selected, partial readings of the data collected were carried out based on the four **Web Content Accessibility Guidelines:** Perceivable, Operable, Understandable and Robust[21], published by the **W3C**[22] **(World Wide Web Consortium)**[23]

In the initial stage, we selected 10 websites for each country. These websites were considered interesting and necessary for users with disability and provided a first glimpse into the accessibility characteristics of the websites offered to user validators (persons with disability) as navigation settings.

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21 Perceivable: Information and user interface components must be presentable to users in ways they can perceive. For example: text alternatives must be provided for all non-textual contents (images, graphs, animations, etc.) and graphic elements must be distinguishable; Operable: User interface components and navigation must be operable by all users. For example: by offering other access methods as an alternative to the mouse, such as keyboard shortcuts; Understandable: Information and the operation of user interface must be understandable. For example: the Website has to display information in a predictable way, have a language set up and said language must be simple and clear; Robust: Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies. For example: screen readers.

22 https://www.w3.org/

23 The W3C, through the Web Content Accessibility Guidelines Working Group (WCAG WG) published in 1999 the WCAG 1.0 or Web Content Accessibility Guidelines. In December 2008, the 2.0 version was published. The WCAG 2.0 guidelines gained the status of recommendations and were reorganized into the 4 Fundamental Principles previously referred to: perceivable, operable, understandable and robust. Last June 2018, the WCAG 2.1 guidelines were published. They propose enhancing the accessibility guidelines for three specific user groups: persons with learning disabilities and cognitive limitations, persons with low vision and PWD who access web contents from mobile devices.

In order to have a general overview of the automated validations carried out, we developed the following table, which details the number of error reports received:

	Total number of validated websites	Number of websites per country – Argentina, Chile and Uruguay	Number of reports
First evaluation stage	30	10/10/10	1634
* Global or general websites	2		
Second evaluation stage	89	26/27/36 plus 2 global sites	5196
Thoroughly automated validations	45	13/15/17	
Third evaluation stage	255	93/97/63	14872
Total number	**389**[24]		**14872**

* General or global websites: Google and YouTube.

Image description: The table analyzes the number of validated websites per country in each stage of the research and the resulting number of error reports. In the first evaluation stage, we analyzed 30 websites, 10 per country, which resulted in 1634 reports. In the second evaluation stage, we analyzed 89 websites (26 for Argentina, 27 for Chile and 36 for Uruguay, plus two global websites: Google and Youtube), which resulted in 5196 reports.

24 This result stems from the addition of three stages: 89 (which includes the first 30 +2) +45+255= 389

In the thoroughly automated validations we analyzed 45 websites (13 for Argentina, 15 for Chile and 17 for Uruguay). In the third evaluation stage, we analyzed 255 pages (93 for Argentina, 97 for Chile and 63 for Uruguay), which resulted in a total of 14,872 reports. The total number of websites assessed was 389, which resulted from the addition of the three samples: 89 (which include the first 30 + 2) + 45+255. The final total number of reports was 14.872).

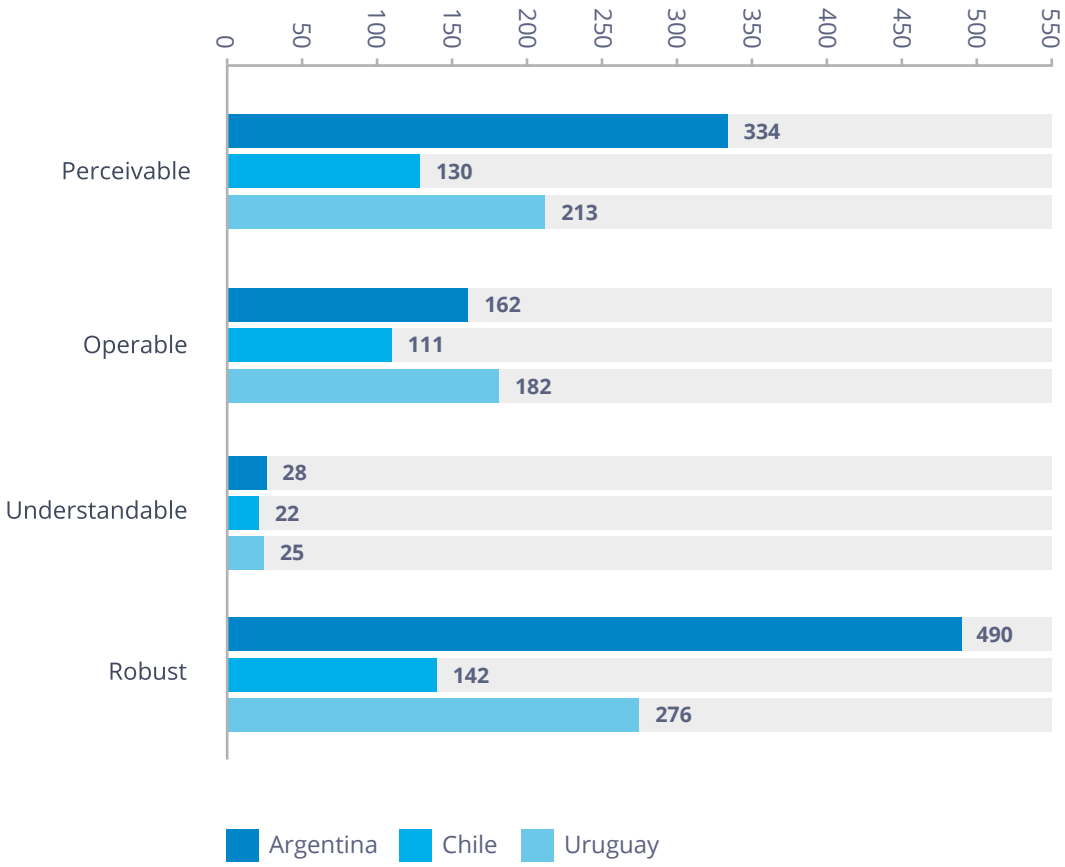
The inquiry provided an important amount of figures and results based upon which we produced a series of graphs and statistical data which reflect the first results obtained in a simplified manner. This information provides an overview of the degree of accessibility found in the **group of websites**[25].

- **An analysis of the general data provided by automated validations:**

Out of the **four Principles** observed, perceptiveness and robustness showed the greatest difficulties.

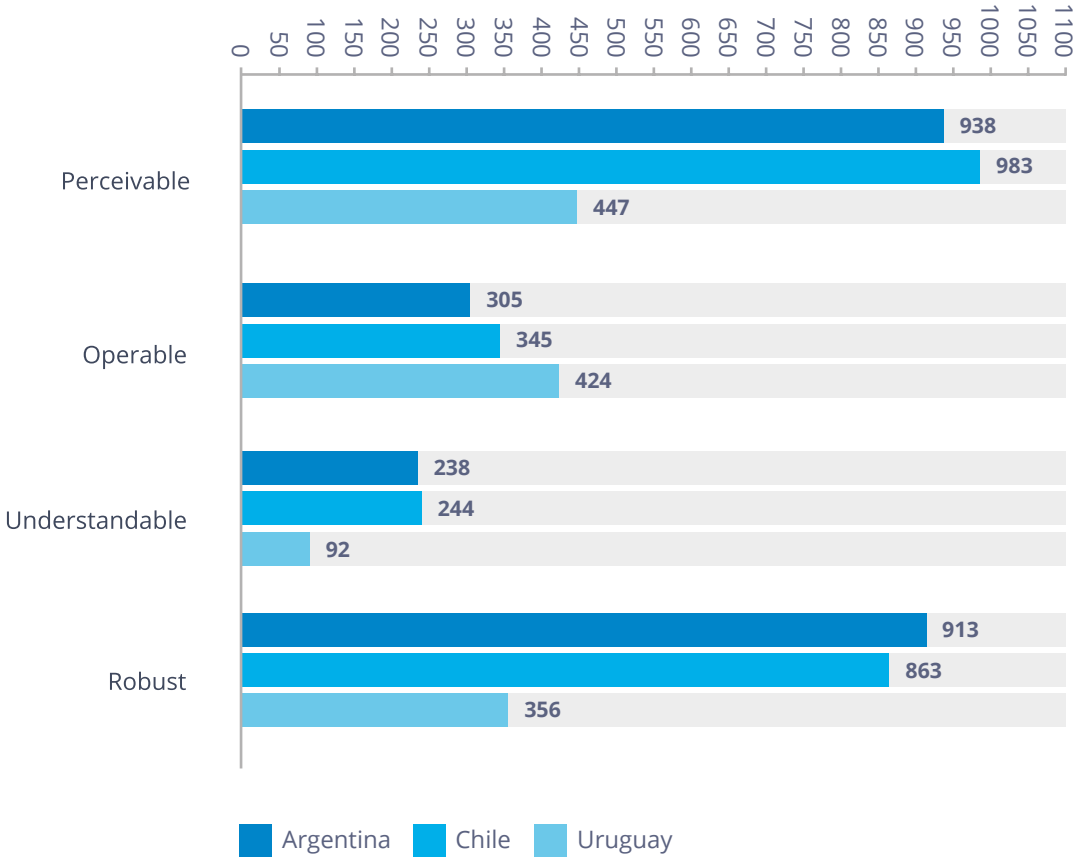
Based on the three moments of data systematization, the following graphs were obtained:

25 It should be noted that the results differ from those of an exhaustive accessibility analysis done to obtain detailed results on accessibility of a website in particular. In this kind of analyses, all the possible inadequacies a website may have regarding the accessibility requirements are included.



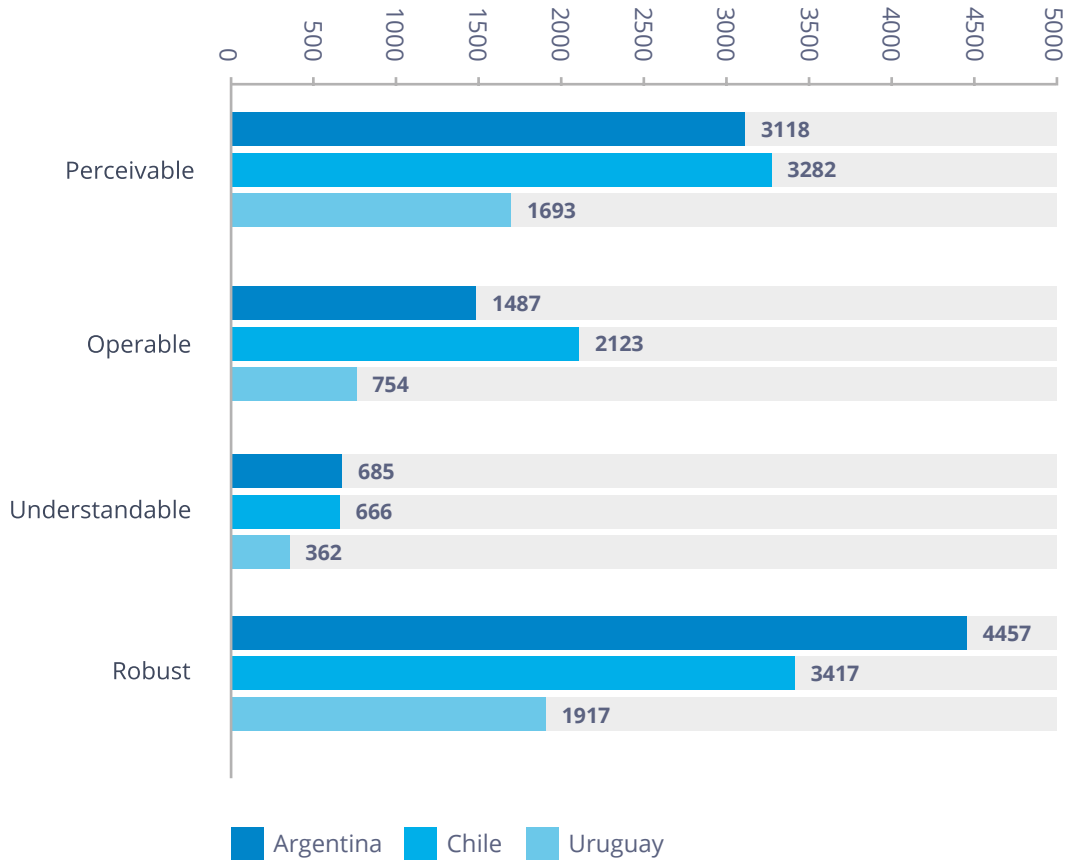
Number of Issues per Principle (First evaluation stage by automated validation -1.634-)

Image description: The bar graph analyzes the number of errors of each one of the four W3C principles, in each of the three countries during the first evaluation stage. The Perceivable principle produced 334 reports in Argentina, 130 in Chile and 213 in Uruguay. The Operable principle produced 162 reports in Argentina, 111 in Chile and 182 in Uruguay. The Understandable principle produced 28 reports in Argentina, 22 in Chile and 25 in Uruguay. The Robust principle produced 490 reports in Argentina, 142 in Chile and 276 in Uruguay.



Number of Issues per Principle (Second evaluation stage by automated validation -5.196-)

Image description: The bar graph analyzes the number of errors of each one of the four W3C principles, in each of the three countries during the second evaluation stage. The Perceivable principle produced 938 reports in Argentina, 983 in Chile and 447 in Uruguay. The Operable principle produced 305 reports in Argentina, 345 in Chile and 424 in Uruguay. The Understandable principle produced 238 reports in Argentina, 244 in Chile and 92 in Uruguay. The Robust principle produced 913 reports in Argentina, 863 in Chile and 356 in Uruguay.



Number of Issues per Principle (Second evaluation stage by automated validation -5.196-)

Image description: The bar graph analyzes the number of errors of each one of the four W3C principles, in each of the three countries during the third evaluation stage. The Perceivable principle produced 3118 reports in Argentina, 3282 in Chile and 1693 in Uruguay. The Operable principle produced 1487 reports in Argentina, 2123 in Chile and 754 in Uruguay. The Understandable principle produced 685 reports in Argentina, 666 in Chile and 362 in Uruguay. The Robust principle produced 4457 reports in Argentina, 3417 in Chile and 1917 in Uruguay.

The three previous graphs show that the errors identified as **"Issues"**, that is, "those which **must be corrected"**, regarding the perceptiveness principle, would not allow the indication to adapt to priority level "A", the first Accessibility Level considered by WCAG 2.0[26].

These values are obtained by means of the evaluation carried out by a technical tool, which, as such, cannot determine whether a website complies with the accessibility guidelines. To determine whether a website is accessible, it is necessary to conduct a human evaluation[27]. Thus, it is necessary to add the evaluation resulting from the user experience validation. All the same, the values regarded as "Issues" indicate that there are critical aspects in the websites observed which have to be corrected in order to eliminate or modify the barriers to web accessibility.

3.2. User experience validation. Reflections on design, biases and imponderables in the field.

The initial approach of the research focused on the legal provisions, the latest trends and the identification of key social actors. Then, based on a sample selection of websites, we were able to examine the background situation of each country relative to digital accessibility.

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26 WCAG 2.0 establishes Guidelines, Principles and Criteria to determine a website's level of conformance, distinguishing between three levels: "A" (lowest), "AA" and "AAA" (highest).

27 https://www.w3c.es/Traducciones/es/WAI/intro/accessibility

Identifying the different sectors allowed us to distinguish between two subgroups:

a) actors with political and economic decision-making power from the public and private domains,

b) population group that has been historically neglected: persons with disability.

This research prioritizes the voice of actors who encounter obstacles when it comes to accessing information and communication. Thus, we take into account the user experience of the very same actors with disability, as it is not possible to come up with recommendations or propose design improvements without their active participation.

On how to approach manual validation by user experience

This evaluation provides useful and necessary information to understand the different scenarios or situations resulting from the accessibility level provided by each site, as it assesses the interaction of persons with disability with the websites in real time and how these websites work.

We recorded experiences in Argentina, Chile and Uruguay and profited from the participation of local users from the university field across the different stages of their educational careers. The participants have different disabilities and all of them live in the Metropolitan Area or in its periphery[28].

28 In Argentina, from the National University of Quilmes (Department of Social Sciences); in Chile, from the University of Chile (School of Occupational

When selecting the websites to be validated, we prioritized the social aspect of the sample, without focusing on the disability of the validators. Instead, we focused on questions such as **to what extent is it possible for people to access websites autonomously where their quality of life is at stake?**

We observed the modes of use of each website and the strategies deployed by each user to "turn" a website "accessible" (for example, the use of navigator complements), the obstacles encountered, the paths taken (mandatory, suggested or preferred) and the point at which the website was abandoned. All this is information is meaningful for assessing a website's level of usability. Users utilized their most preferred devices for their validations, such as computers and mobile phones. Regarding work time, they were given approximately 150 minutes to navigate websites freely.

On the stake holderes chosen for manual validation

Most of the participants of user experiences were selected based on the "snowball" methodology[29] and because of their links to the national universities found in each country. This means that validators have characteristics which are typical of the academic world: a tendency to conduct research and solve problems together with specific knowledge regarding the sample selection of websites.

Therapy); in Uruguay, from the University of the Republic (School of Social Sciences) and from Montevideo's Psychosocial Center.

29 Snowball sampling is a nonprobability sampling technique frequently used to measure characteristics in populations that lack a sampling frame or to reach populations and/or individuals of difficult access, also known as hidden populations. In these cases, it is not possible to apply any probability sampling technique. With this technique, though, existing study subjects recruit future subjects from among their acquaintances. Thus, the sample group is said to grow like a rolling snowball during the development of the sampling.

On the territorial cut-off point

This regional sample is not representative of the global and nationwide situation of digital accessibility in the countries under analysis, as the field work was done only with actors who live in the metropolitan area: in the case of Argentina, they were from the City of Buenos Aires, Greater Buenos Aires and City of La Plata; in the case of Chile, they came from Santiago de Chile; and in the case of Uruguay, they were from the city of Montevideo.

On the connectivity conditions

Both in Argentina and Chile, we carried out the planned activities with an optimum connectivity level and using devices that worked perfectly or which we were able to replace when necessary. In the case of Uruguay, there were two validation contexts: a central academic setting, where the activity encountered no technical difficulties and a Day Centre, far from the metropolitan area, where the Internet connection faced some difficulties.

On the time frame of the field work

Throughout the sample research, which spanned from November 2018 to April 2019, many of the websites navigated experienced transformations, which resulted in websites with different degrees of accessibility. Websites are characterized for being dynamic and changing; thus, there may be differences between the various stages of the research (data collection, analysis, drafting and presentation of the final report) impacting the end results.

3.3. Website validations by user experiences. Access to information and Digital Accessibility

Broadly speaking, accessibility, including digital accessibility, allows people to act within a social setting with greater autonomy and efficiency.

Web accessibility, in particular, allows for direct access to information without any intermediaries, fostering a greater social, civic and cultural participation. Given the circumstances of the 21st century, accessibility and access to information have become a fundamental part of the exercise of citizenship.

Now, the concept of accessibility is linked to that of *usability*.[30] *Accessible* means *anything that may be usable* and, in view of this relation, the use of guidelines for both accessibility and usability is essential to meet users' needs.

ISO standard 9241-11[31] recommends an approach based on processes to assess usability by means of a **User-Centered Design (UCD)**[32], which highlights the importance and priority of the information provided by manual user experience validations.

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30 Usability contemplates effectiveness or the degree to which a user can achieve quantified objectives; efficiency, or the amount of resources needed (effort, time, etc.); the level of satisfaction achieved during navigation (a subjective factor which contemplates users' individual potential to interact) and e-participation or the possibility to communicate/interact to express complaints-suggestions-requests-gratitude, etc.

31 ISO 9241 should be applied along with standard ISO 13407, which provides a guide to achieving quality in use by incorporating iterative activities involved in User-Centered Design (UCD). https://www.iso.org/standard/52075.html

32 User-Centered Design (UCD) is defined as a multidisciplinary activity which involves human factors /ergonomics, usability knowledge and techniques. It aims to enhance effectiveness, efficiency and working conditions and it counteracts possible adverse effects of use.

User experience validation substantially resignifies the usability variable. In the access chain **find-understand-use**, the usability variable factors considerably into citizens' material possibilities of self-realization.

Between Universal Design and Digital accessibility

In the current scenario of digital environments, the actors under analysis are represented by their portals and websites, which provide several products and services essential for the full autonomy and inclusion of PWD.

Today, both the Internet and digital devices allow us to perform a great number of actions and tasks autonomously. Yet, if accessibility is not contemplated, the virtual environment can turn into another barrier and difficulty for PWD aside from the ones typically found in physical environments.

For technological developments and digital information to reduce the number of obstacles posed to any user, it is necessary to apply the principles of ***accessibility, usability, interoperability*** and/or ***Universal Design.***

Universal Design[33] refers to any design that allows a person using an artifact[34], to feel comfortable with its use without a need of adaptation or specialized design.

"Accessibility" may be defined as the *condition* that must be met by *settings, processes, products and services* (including digital ones) so that these are understandable, usable and workable for all persons in terms of security and comfort and in the most autonomous and natural ways possible.

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33 The concept was coined by Ron Mace, an architect, designer and user of a wheelchair. https://projects.ncsu.edu

34 Artifact refers to any object, machine or device built with a certain technique for a given purpose.

Web accessibility also means universal access to the Internet. The **World Wide Web Consortium**[35] (W3C, 2010) defines ***universal access*** as the possibility for all individuals to access resources on the Web regardless of their hardware, software, language, culture, geographic location, or physical or mental capacities.

Web accessibility not only benefits PWD, but also other user groups.[36]

WCAG 2.0 accessibility requirements, published by the W3C in 2008, were used as guidelines for data collection purposes during the field work. However, these standards have not been the only input to that effect[37].

4. Intersections between the desirable, the real and the possible:

In this section, we deal with the navigation experiences of users in view of the different dimensions: perceptible, understandable, usable and robust. We prioritize the evaluation of users regarding the effective access to information in order to point out the main barriers found in the digital environment that render contents inaccessible.

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35 W3C is an international and independent consortium which gathers governmental and nongovernmental organizations and companies, and whose goal is to promote the evolution and interoperability of the Web in order to promote accessibility (http://www.wec.es).

36 Aged users or users with temporary disabilities, adversely affected by environmental circumstances (for example, poor lighting), with equipment and connections with reduced capacities or obsolete navigators; users who do not master the language or have cultural differences, as well as users who are inexperienced in handling technological devices.

37 See: http://www.enre.gov.ar/web/bibliotd.nsf/($IDWeb)/C72EEF7C4F836F8003257D3A004F2B29

It is worth highlighting that these dimensions are not hermetic nor have clear boundaries. On the contrary, there is a juxtaposition of dimensions and sub-dimensions, which reveal that accessibility is a complex communicational phenomenon.

In each case, we suggest possible alternatives or critical modifications to guarantee access to information.

4.1. PERCEPTIBLE – user's interface

This dimension focuses on the perceptibility of information and user interface components so that contents can be accessed with ease both visually and auditorily.

Important visual recommendations:

- Text alternatives for all non-text content
- Adequate font size and type (without serifs), use of bold type to highlight content and align left
- Increase or reduce font size option
- High contrast
- Possibility to change contrast and invert colors to facilitate understanding
- Limited use of images, graphs and tables
- Clear design

Also take into account:

- Images without overlapping text content. This has occurred repeatedly in the three countries; for example; the telephone numbers appearing on images.

- Navigation mechanisms. Portals that offer intuitive designs facilitate access and expand access margins. Websites with intuitive designs allow interacting with mobile phones or computers easily.

- Navigation access. Websites must be navigable via mouse and keyboard.

- Spatial distribution of information. Categories, tabs and link options must appear at the centre. For some people, marginal categories constitute imperceptible information.

- Accessibility symbol. Websites must have an accessibility symbol, which should appear immediately upon access. This option is not found in the region.

- Easily perceivable accessibility options. Information on accessibility options must appear in the homepage and be perceived quickly and easily.

- Standardization of information, components and use patterns.

- Aesthetics: Common style and/or aesthetics in State websites for referential purposes. It also helps identification to a great extent.

- Website design adaptable to different devices (Responsive). Validations showed that mobile devices were the most preferred means of browsing.

An overview into the websites of the national public administration

There has been a slight improvement in the homepages of the Public Administration of the three countries. In general, the new websites follow style guidelines involving minimalist characteristics such as simple and clear aesthetic designs and wording, thus avoiding the use of ornaments which may distract or affect the site's performance. Websites offer evidence that they are moving towards better accessibility levels.

It is recommended that purchase processes initiated by the Public Administration for the procurement of goods and technology services (hardware and software) require *sine qua non* compliance with accessibility and usability standards in their bid specifications. It must be born in mind that, given the volume of purchases, administrations are very attractive clients for companies.

4.2. UNDERSTANDABLE - readability

In all websites contents and information must be legible and understandable, have a predictable distribution and a default language. Language must be simple and clear. It must be born in mind that access to information depends on understandability and readability.

The portals of the three countries often use the concept of transparency as the basis of citizens' access to information, which stresses the role of understandability. Governments must be clear and simple when addressing citizens. Otherwise they could interrupt the communication circuit, which would jeopardize the exercise of democratic rights.

- **Clear language, easy reading and web accessibility. Finding-understanding: usability at risk or "If I don't understand it, I don't use it"**

In the geographical area of the countries under analysis, we noticed a wide variety of cultural riches. In the Southern Cone, there are communities that speak the same language, but use different varieties (for example, Spanish Braille); or they speak different languages, as is the case with indigenous communities, immigrants and visual-manual languages (for example, Argentine, Chilean and Uruguayan Sign Language). As a result, these are hybrid communities.

In an era where public life has gone virtual, those responsible for communication and information must ensure the greatest understandability of oral, written and signed expressions.
Effective communication depends on "legibility and readability". Both complement one another, making accessibility possible.

According to the *Plain Language Federation* [38] "a communication is in plain language if its wording, structure, and design are so clear that the intended audience can easily find what they need, understand what they find, and use that information".

Some minimum guidelines when thinking about the texts:

- Addressee's characteristics

- Use of simple terms, avoiding technicalities (explain them if impossible to avoid)

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38 Available at https://plainlanguagenetwork.org/plain-language/que-es-el-lenguaje-claro/

- Use short and clear sentences
- Use adequate or adapted content
- Use of bullet points – list of instructions to order information
- Use of broad spaces surrounding image and text
- Consistent use of font type for the text (serif font)
- Use of images in a way they complement information without distracting
- Think about color contrast and bright
- Justify text to the left of reader
- Leave communication channels open so that users can provide feedback that will allow improving design and contents

In Argentina and Chile there is a Plain Language Network [39] associated with Easy Reading [40].

The three countries show that there is a predisposition on the part of Governments to transform and adapt virtual settings in order to achieve enhanced levels of democracy, especially when it comes to "making themselves understood". They resort to strategies that involve, for example, incorporating FAQ systems (frequently asked questions), tutorials and video productions that make formalities before the State more understandable.

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39 On November 8, 2018, the Argentine Plain Language Network (RALC, in Spanish) was created to encourage State agencies and public institutions to use plain language in documents and public acts.

40 http://www.lecturafacil.net

4.3. USABILITY – Intersection between the operable and usable

The concept of accessibility is linked to that of ***usability***; *accessible is that which is usable.* Usability is a product's quality attribute having to do with its ease of use. However, it should be noted that an application is never intrinsically usable. It may be used in a given context and by specific users. A website's level of usability is generally determined by user experience, or in other words, **manual validation.**

This is an important matter, as Governments, by means of e-participation or other agents, such as banks, are always looking for simple and safe ways of accessing these services. In most situations it is necessary to protect and store sensitive information, and this requires applying different authentication levels (captcha[41], password reset, data updates, etc.). All of these typically represent major barriers to accessibility.

Hence, it is worth making some suggestions to promote accessibility:

- **Ensuring that links make sense out of context:** each link must make sense, even if the text in that link is read separately, as screen reader users have an option that allows them to navigate based on the list of links offered by the website. Interactive maps and calendars with scroll-down options for months and years, typical of forms, are not detected by screen readers.

41 Captcha (Completely Automated Public Turing test to tell Computers and Humans Apart) is a visual verification designed for the system to tell computers and humans apart in order to prevent robots from accessing and sending automatic comments such as spam.

- **Allow users to skip repetitive elements:** there are repetitive elements in websites such as headings (website's name and logo), navigation points (website's main and secondary menus) and ads. Allowing users to skip these repetitive elements on each page facilitates the reading process for those who use screen readers while navigating.

- **Providing page headers:** page headers allow defining the structure of a website. A screen reader navigates across the page's headers. In this way, users who resort to this technical aid can easily and quickly access the different parts of a website without having to review the whole content.

- **Providing alternative text:** alternative text, indicated by the alt attribute in the <img> label, provides a text alternative for non-text content found in websites, for example, images. This is especially useful for people using screen readers to access a website's content. Alternative text must be written taking into account the context in which the content is being used. It should convey the same information or provide the same functionality.

- **Providing a label for form controls:** each form control, for example the "save updated data" must have an associated label. The label must be descriptive and suitable to the function performed by the control. In our example, a label that only says "save" provides little information.

- **Provide appropriate time extensions for completing formalities or transactions:** users may require different time limits for actions such as filling out forms or making suggestions due to motor difficulties, low vision, slow reading or because they are accessing content with the aid of technical assistance, which demands more time. It is important to point out that, for the purposes of pursuing the ideal of participation, some websites provide online human assistance during working hours.

4.4. ROBUST – user applications and technical aid

The robustness principle is the most dependent on technology. In order to fulfill this principle, the website must be compatible with different navigators so that it can be transmitted and interpreted by said navigators and the supporting devices, also referred to as technical aides (for example, screen readers) or by any other program currently utilized in websites or those that may be developed in the future.

Compatibility means the condition whereby an application, software or website and assistance technologies or an ample variety of user agents can understand one another correctly. Compatibility issues may arise from the misinterpretation made by some user agents or software related to technical aid due to the way in which instructions or contents are written in a website.

Based on the Conformance Requirements, its compliance results in the classification “Level A”, that is, the minimum level required for accessibility.

The following recommendation applies to **Compatibility**: Maximize compatibility with existing and future user agents, including assistance technologies.

It is one of the Principles that saw the greatest number of errors in the group of websites validated throughout this research:

Principio	Argentina	Chile	Uruguay	Globales
Perceptible	3118	3282	1693	197
Operable	1487	2123	754	58
Comprensible	685	666	362	35
Robusto	4457	3417	1917	1415
TOTAL	**9747**	**9488**	**4726**	**1705**

Table with number of Errors or Issues per Principle from the total of 389 validated websites

Image description: The table shows the number of issues per principle from the total of 389 validated websites. In Argentina, there were 3118 issues for the Perceptible principle, 1487 issues for the Operable principle, 685 for the Understandable principle and 4457 for the Robust principle, with a total of 9147 issues for Argentina. In Chile, there were 3282 issues for the Perceptible principle, 2123 issues for the Operable principle, 666 for the Understandable principle and 3417 for the Robust principle, with a total of 9488 issues for Chile. In Uruguay, there were 1693 issues for the Perceptible principle, 754 issues for the Operable principle, 362 for the Understandable principle and 1917 for the Robust principle, with a total of 4726 issues for Uruguay. In the global websites under analysis (Google and Youtube) there were 197 errors with the Perceptible principle, 58 with the Operable principle, 35 with the Understandable principle and 1415 with the Robust principle, with the total number of issues being 1705.

5. In-person interviews. The voice of entities related to the subject.

We conducted in-person interviews with representatives identified as key stake holders to compare this information with the data under analysis. The interviews included state, technical and academic institutions as well as institutions from civil society.

In general terms, the interviewees consider it important and/or convenient that PWD design and/or execute software, develop technical material and participate in the development of regulations, lines of work and national public policies on the access to technology and information.

All countries acknowledge the need to provide specific training in university courses of studies related to the subject. They also propose creating the Observatory of Web Accessibility so that the public and private sectors, universities and civil organizations can share their findings.

Upon assessing the Government websites, they observe that, even though they are not difficult to access, it is necessary to change the way in which they organize and offer available information, especially in websites of private banks or public services (taxes, electricity, gas, etc.).

In Argentina, the National Office of Information Technology provides two training courses: “Web Accessibility. Introduction and guidelines” and “Web Accessibility. Techniques and tools to improve it”. They offer vacancies to directors so they can train officers in their departments.

Chile has one particular characteristic which is that the State awards web accessibility recognitions for “Inclusive Websites” created by private sector companies wishing to participate, which allows disseminating and making the issue visible. They recognize they are promoting a line of action for cultural change.

In the university field, both in Uruguay and Argentina, some institutions conduct researches on web accessibility and teach contents and practices in specific subjects.

The in-person interviews that were part of this research work are a valuable instrument as they allow understanding the stand and approach taken by the participants involved in this field, who form part of an institutional group of users.

6. Digital Accessibility and strengthening growth. Citizen participation.

In the 21st century, Digital Accessibility is fundamental to ensure the exercise of citizen rights, without making distinctions nor discriminating on the grounds of biologic or physical traits.

Digital Accessibility promotes a greater social, civic and cultural participation, as it allows accessing information directly and managing personal matters without intermediaries.

In order to reach that objective, it is essential to focus on the relation between the State and Civil Society if we want to shorten the gap between what laws dictate and what users obtain through their experience.

6.1. Gap between law and experience. What is the link between States and Civil Society?

Even though the three countries have signed the CRPD, there is a lack of specific laws regarding the format of web content production, which shows the lack of commitment on the part of Governments to comply with international laws. Clearly, if the State does not fulfill its responsibilities, it is likely that the private sector will also fail to implement said laws proactively.

A key factor to make any advancement in this respect is granting users the opportunity to participate in the process of social transformation required to ensure digital accessibility. The group of persons with disability must be attended to not only when passing local regulations for web accessibility in keeping with international and regional standards, but also when establishing audit agencies within companies, the technical sector and the different State departments and levels. The interviewed users in each country have clearly expressed that *"States cannot be their own auditors; persons with disability associations must participate in the audits".*

If users do not participate in the procedures of technical and legal transformation and in the decision-making processes, accessibility will never materialize. With respect to this matter, users conclude *"without accessibility, the right to information and communication is being systematically violated."*

6.2. Alternative reports. International law, State and Civil Society

The signatory countries of the CRPD have undertaken to produce reports regularly informing of advancements,

achievements, obstacles and difficulties encountered regarding disability, as well as the progress made by the State. These regular reports alternate between the "Country Report", done by Governments and the "Alternative Reports", done by civil society organizations. Both are presented before the Committee of the Rights of Persons with Disabilities of the UN. The aim is to contribute, from a complex and varied perspective, to the current situation of this subject matter.

Critical contributions from the point of view of civil society

The Alternative Reports of the three countries show flaws in the implementation of policies regarding accessibility and indicate some specific violations of the rights of PWD in general[42].

ARGENTINA's Alternative Report[43] for 2013-2017 refers to the violation of the Law on Accessibility to Information on Websites (Law 26.653) despite the fact it was passed in 2013. The report underscores the lack of accessibility in most web contents and demands information from the State regarding the concrete measures available to ensure that physical and communicational accessibility, including accessibility to websites, be implemented in accordance with articles 4, 5 and 9 of the CRPD. It also urges the State to provide detailed information on the fulfillment of Law on Audiovisual Communication Services No 26.522, which establishes the incorporation of additional means of visual communication: closed caption, sign language and audio description.

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42 http://www.desafioceroaedes.com

43 http://www.redi.org.ar/Documentos/Informes/Informe-alternativo-Argentina-2017/Informe-Alternativo-Argentina.pdf

CHILE's Alternative Report[44] of 2016 does not analyze the web accessibility issue. In terms of communicational regulations, it does refer to the need to comply with the applicable laws to ensure the access of persons with disability to information of public interest. It also considers it necessary for public services and electoral campaigns financed with public funds to comply with law requirements regarding the use of a communicational design for PWD.

URUGUAY's Alternative Report[45] of 2016 does not specifically refer to web accessibility, but it does recommend that the State adopt *"the relevant measures to ensure that persons with disability can access physical environments, transportation,* ***information and communications, including information and communications systems and technologies."***

6.3. Links between the public, private, technical and academic sectors

For the State to fully comply with international laws, and therefore, for the private sector to keep implementing the applicable laws of its own accord, it is convenient to strengthen the link between the public, private, technical and academic sectors.

The different stake holders should consider that, aside from their legal duties, accessible websites bring about several advantages, such as the possibility to reach more potential users communication wise. This means that new markets can be created to accommodate the emerging services, applications and contents while catering for the needs of PWD.

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44 https://tbinternet.ohchr.org/Treaties/CRPD/Shared%20Documents/CHL/INT_CRPD_CSS_CHL_23091_S.pdf

45 Alianza de Organizaciones por los Derechos de las Personas con Discapacidad del Uruguay (2016)

Some thoughts and suggestions

- Create a department within the State responsible for promoting, managing and monitoring the implementation of accessibility.

- Preparing and providing statistical data in the area of disability in order to plan and execute public policies.

- Creating an Observatory of Web Accessibility where the public and private sectors, universities and civil organizations can participate.

- Proposing that the public sector raise awareness regarding the minimum standards needed for web accessibility.

- Providing legal venues to oblige the public and private sectors to respond to suggestions, complaints and requests made by website users in the short term.

- Articulating trainings for the different sectors with the academic sector: (1) the technical sector can be used to generate new programming techniques; (2) whereas social sciences can be used to further develop the social model, which has an impact on the awareness processes and practice transformations in that it favors the participation of all citizens.

- Promoting and financing, from the public and private sectors, researches to further develop and enhance web accessibility conditions for persons with disability. Knowledge makes social and communicational transformation possible.

- Articulating audits of the public and private sectors with organizations having persons with disability. This has a two-fold advantage: employment opportunities for PWD and user experience validations in institutional evaluations.

- Regarding accessibility as a universal right and not as being dependent on “disability type”.

- Promoting initiatives for the State and civil society to implement the appropriate devices to enhance the use of ICTs through bursaries, development programs, funds for technological training, among others.

- Promoting modifications in the design and syllabuses of strategic courses of studies for the inclusion of PWD to incorporate accessibility, in broad terms, as the central aspect of professional life. This proposal should involve higher, technical, private and public education. Some of the courses of studies requiring urgent modification include: social communication, computer programming, law, education, teacher training colleges and all types of design courses.

Some specific considerations for organizations/ entities of the public and private sectors.

- Announcing the explicit commitment towards accessibility in codes of ethics and conduct and laws, as appropriate.

- Developing and implementing specific strategies to achieve the previous goal.

- Appointing a person or creating a department responsible for promoting, managing and monitoring the implementation of accessibility.

- Offering institutional venues to raise awareness and provide training on the subject across the board.

- Taking into account knowledge on accessibility when hiring personnel.

- Ensuring that providers offer (and this is mandatory for the State) accessible products and services, even more so when contractor organizations/entities are involved.

- Considering accessibility permanently in project developments, from inception to design, development and evaluation.

- Allocating economic and human resources to accessibility, along with highly trained professionals.

7. Final remarks

Under the international law on the rights of persons with disability and the accessibility to online environments, the **social model** constitutes a key commitment when it comes to the design of public policies by the signatory States of the CRPD, in the present case, the three countries that are part of this research.

States must **take ownership** and **make a commitment**, by allocating resources to continue enhancing web accessibility and by creating and strengthening areas or sectors in view of the specific inquiries made concerning the subject matter.

States have to **prepare and provide statistical data** relative to the area of disability, with a special focus on information and communication technologies in order to plan and execute public policies and to design law enforcement and oversight.

In terms of monitoring and evaluating current legislation and public policies, it is necessary to establish and make public which are **the audit agencies** in charge of supervision mechanisms.

The participation of **Civil Society**, especially that of persons with disability, is crucial in regards to accessibility **"from and for the user"**. Their participation is needed for the adoption of laws, lines of work and the design of public policies nationwide on the access to information and communication services in online environments.

In a society immersed in a process of technological and digital change, it is of utmost importance that we work on the development and application of tools that protect the right to full autonomy and citizen inclusion of persons with disabilities.

This report was prepared as a contribution to exploring web accessibility and the situation of persons with disabilities, with a special focus on rights and digital technologies.


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